

# Assistant Chief of Staff for Installation Management



**Renewable Energy Use at Installations**  
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**DAIM-FD**

# Why Renewable Energy ?

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- Declining and finite conventional (coal, oil, gas) resources
  - Supply constraints and rising energy costs
  - High energy demands expected in the 21st century from global industrialization
  - Global warming from “Green House Gases”
  - Newer, more cost effective renewable technologies and a maturing industry
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# Renewable Technologies

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- Solar - virtually unlimited locations
    - Hot water and space heating
    - Photo-voltaic power generation
    - Active and passive lighting systems
  - Geothermal - limited to certain locations
  - Wind Power - limited locations, velocity sensitive
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# Wind Power

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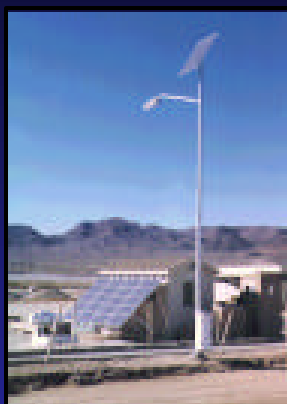
- Issues
  - Wind data required for 1-2 years at 60 meters height
  - Wind data must be very close to final turbine location - not general vicinity
  - Environmental concerns
  - Economy of scale requires partnerships with local city/county and commercial enterprises

# Renewable and New Technologies

## -Army has a history of support for innovation-

### Photovoltaic

- New Technology
- 32.3% Efficient
- Double current ratings



Fort Irwin

### Natural Gas Cooling

- 12 Sites
- Benefits: Demand savings and lower global emissions



- Costs are Decreasing
- Purchase “Green Power” where available.
- Be a catalyst for change

DOE initiatives: 5% of the nation's electricity by 2020, increase states with > 20 MW to 16 by 2005 and 24 by 2010, increase federal use 5% by 2010

### Wind Power



### Fuel Cells

- Central Heating Plants - 11 Sites
- Hospital Utility Plants - 7 Sites
- Pools/Fitness Centers - 3 sites



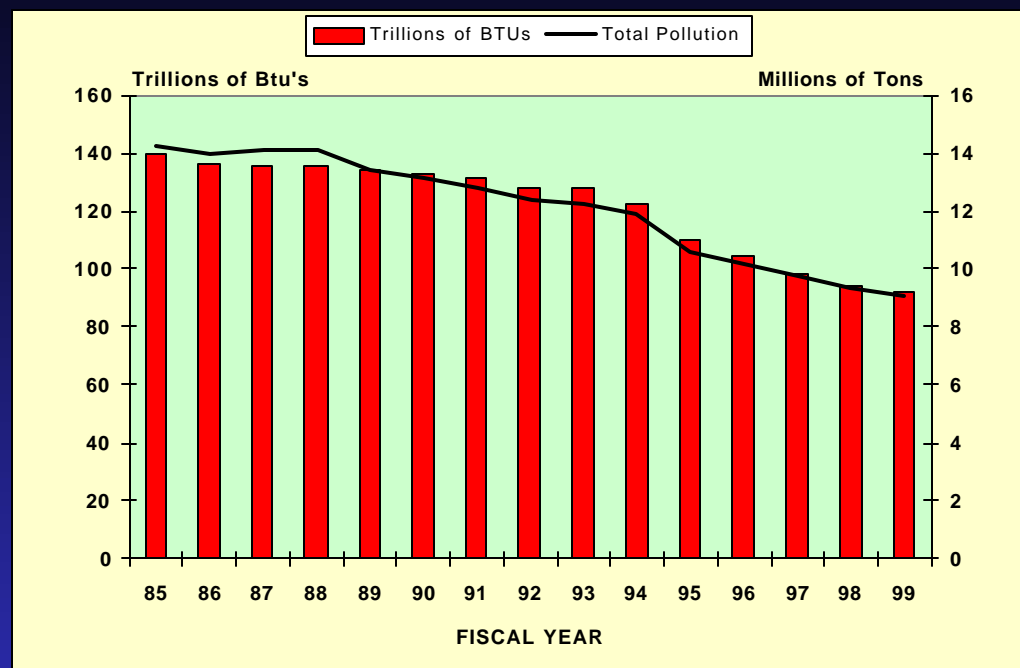
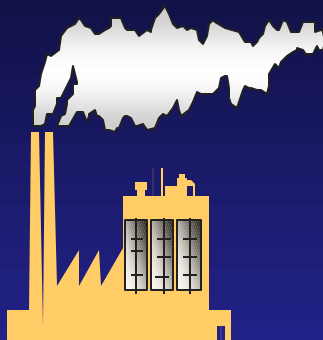
### Solar Water Heating

- Water heating load relatively consistent
- Supplements or displaces electric water heater



Fort Huachuca

# Environmental Benefits



- CO<sub>2</sub> Reduced 36%
- NOX & SOX Reduced 58%
- Hydrocarbons Reduced 55%
- CO Reduced 49%

Program  
Supports  
Pollution  
Prevention.



# Session Speakers

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- Mr. Steve Sklar, American Solar Industry Assoc.
  - Mr. Steve Siegel, Center for Army Analysis
  - Ms. Kathy Belyeu, American Wind Energy Assoc.
  - Mr. John Thornton, NREL
  - Mr. William Stein, Fort Huachuca
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